

## Restore-L (Restore-L)

Completed Technology Project (2016 - 2020)



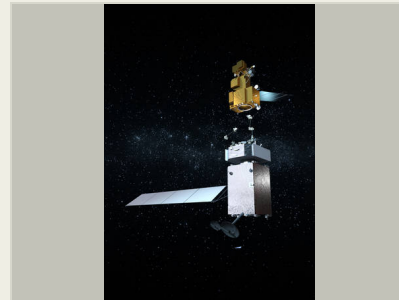
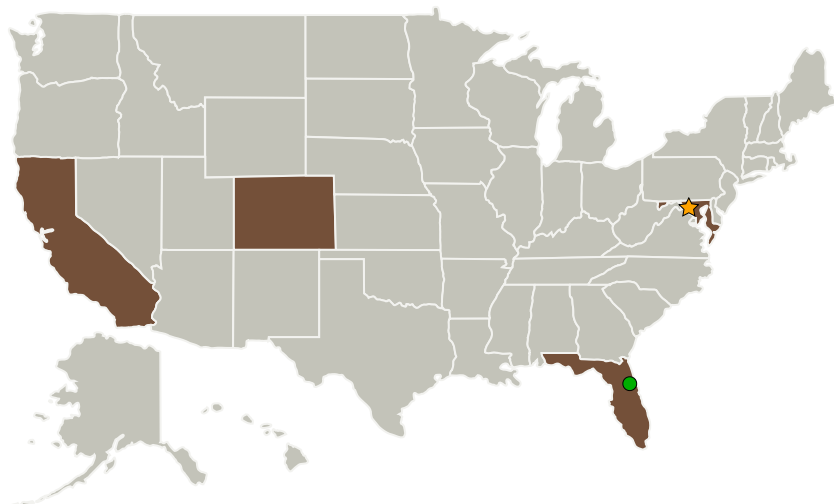
## Project Introduction

The Restore-L Mission will demonstrate refueling and a relocation of the Landsat 7 satellite. Restore-L will launch to a nominal (LEO) altitude of 680 km and conduct its on-orbit checkout. Landsat 7 will descend to a servicing altitude of 685 km and enter a stable, solar-inertial attitude. Restore-L will then use both ground-generated and on-board navigation solutions to rendezvous with Landsat 7 and perform an autonomous capture. After client capture, the assigned refueling tasks will be performed by ground operators. When all refueling tasks are complete, Restore-L will modify Landsat 7's orbit to demonstrate relocation capability then release the spacecraft and depart to its own transit orbit.

## Anticipated Benefits

Restore-L advances robotic satellite servicing technologies to operational status, including refuel, repair, and orbit modification services to satellites in LEO.

## Primary U.S. Work Locations and Key Partners



The Restore-L servicer extends its robotic arm to grasp and refuel a client satellite on orbit. Artist's rendering.

## Table of Contents

Project Introduction	1
Anticipated Benefits	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Images	3
Links	3
Project Website:	3
Technology Areas	3
Target Destination	3
Supported Mission Type	3

## Technology Demonstration Missions

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
●Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida
Space Systems/Loral, LLC(SSL)	Supporting Organization	Industry	San Jose, California
United States Geological Survey(USGS)	Supporting Organization	US Government	Menlo Park, California
West Virginia University	Supporting Organization	Academia	Morgantown, West Virginia

#### Primary U.S. Work Locations

California	Colorado
Florida	Maryland

#### Project Transitions

▶ **April 2016:** Project Start

✓ **January 2020:** Closed out

**Closeout Summary:** This project did not end. It was restructured to merge with SPIDER and was given a new name.

#### Organizational Responsibility

##### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

##### Lead Center / Facility:

Goddard Space Flight Center (GSFC)

##### Responsible Program:

Technology Demonstration Missions

#### Project Management

##### Program Director:

Trudy F Kortes

##### Program Manager:

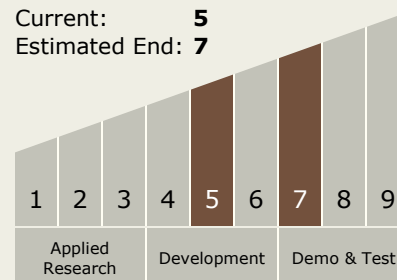
Tawnya P Laughinghouse

##### Principal Investigators:

Brent Robertson  
Jill M McGuire

#### Technology Maturity (TRL)

Start: 5  
Current: 5  
Estimated End: 7

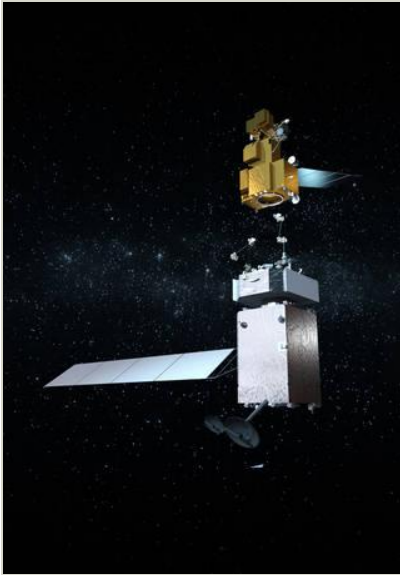


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### Images



#### Restore-L.jpg

The Restore-L servicer extends its robotic arm to grasp and refuel a client satellite on orbit. Artist's rendering.

(<https://techport.nasa.gov/image/100908>)

### Links

GSFC satellite servicing

(<https://nexis.gsfc.nasa.gov/OSAM-1.html>)

OSAM-1 TDM site

([https://www.nasa.gov/mission\\_pages/tdm/satellite-servicing.html](https://www.nasa.gov/mission_pages/tdm/satellite-servicing.html))

### Project Website:

[https://www.nasa.gov/mission\\_pages/tdm/main/index.html#.VQb6XUjJzyE](https://www.nasa.gov/mission_pages/tdm/main/index.html#.VQb6XUjJzyE)

### Technology Areas

#### Primary:

- TX04 Robotic Systems
  - └ TX04.5 Autonomous Rendezvous and Docking
    - └ TX04.5.5 Capture Mechanisms and Fixtures

### Target Destination

Earth

### Supported Mission

#### Type

Push